



TSL/SPCB/TS-03/2024-15/489
September 09, 2024

The Member Secretary
State Pollution Control Board, Odisha
Parivesh Bhawan, A/118,
Nilakantha Nagar, Unit-VIII,
Bhubaneswar-751 012

Subject: Submission of Environment Statement report for Financial Year 2023-2024.

Reference: Board's Consent Order no. 4463/IND-I-CON-5440, dated 23.03.2023.

Dear Sir,

This has reference to the captioned subject and letter cited above. Please find enclosed herewith dully filled "Environment Statement report (Form-V)" for the Financial Year 2023-2024 in prescribed format for 5.6 MTPA crude steel production at M/s. Tata Steel Limited, Meramandali, Dhenkanal, Odisha.

This is in line compliance to the statutory requirement.

Thanking you

Yours faithfully,

For, Tata Steel Limited

Anoop Srivastava
Chief Environment - TSM

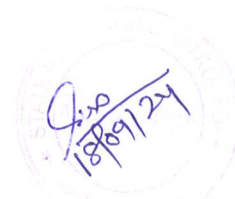
Encl: As above

Copy to:

1. The Regional Officer, State Pollution Control Board, Odisha, Angul.
2. Deputy Director General, MoEF&CC, Integrated Regional Office(EZ), A/3, Chandrasekharapur, Bhubaneswar -751023.



bee 2.09.24
13.09.24



TATA STEEL LIMITED

Narendrapur Kuspanga Meramandali Dhenkanal 759 121 Odisha India Tel 91 6762 352000
Registered Office Bombay House 24 Homi Mody Street Fort Mumbai 400 001 India Tel 91 22 66658282 Fax 91 22 66657724
Corporate Identity Number L27100MH1907PLC000260 Website www.tatasteel.com

[FORM-V]
(See rule 14 of The Environment Protection Act, 1986)
Environment Statement for the financial year ending 31st March 2024

PART – A

General Information		
	Name of the Company	Tata Steel Limited, Meramandali
1.	Name & Address of the owner/occupier of the industry, operation or process	Sri Thachat Viswanath Narendran, CEO& MD Tata Steel Limited, Meramandali At: Narendrapur, PO: Kusupanga Via: Meramandali, Dist.: Dhenkanal, Pin: 759121, Odisha
2.	Industry Category	Red-A
	Primary (STC Code),	Large Metallurgical Industry
	Secondary (STC Code)	Integrated Iron & Steel Industry
3.	Production capacity-Units	Production Capacity: 5.6 MTPA Crude Steel. Production During 2023-24: 5.16 Million Tons Crude Steel. (Major units are: RMHS & RMPP, Blast Furnaces, Coke Ovens, Sinter Plants, SMS, BOF, HSM, CRM, Captive Power Plant, Industrial By-Product Management Division and Utilities including Air Sepretaiion Units.)
4.	Year of establishment	2006
5.	Date of last environment statement submitted	25 th September, 2023 vide letter no.TSL/SPCB/BS-03/2023-18/373

PART – B

Water & Raw material Consumption		
1: Total Water Consumption (m³/d)		
Water Consumption	During the previous Financial Year (2022-23)	During the current Financial Year (2023-24)
Industrial Consumption (Inside Works as Makeup water)	52,283	51,029
Domestic Consumption (Inside Works as Drinking water)	4,243	3,773
2: Water Consumption per unit of the product (m³/tcs)		
Name of the Products : Crude Steel	Process fresh water consumption per unit of product m³/tcs)	
	2022-23	2023-24
Specific fresh Water Consumption	3.55	3.36

3: Raw Material Consumption (Works):			
Name of Raw materials	Name of Products	Consumption of raw material per unit of product (MT/tcs)	
		During the previous Financial Year (2022-23)	During the current Financial Year (2023-24)
Iron (Lump & Fine)	Crude Steel (Slab/Billet)	1.31	1.26
Purchase Pellet		0.37	0.33
Limestone & Dolomite		0.36	0.37
Quartz		0.02	0.03
Coking Coal		0.54	0.67
Non-Coking coal		0.48	0.35
Scrap		0.06	0.07
Ferro-Chromium		0.0001	0.0003
Ferro-Manganese		0.0022	0.0029
Ferro-Silicon		0.0002	0.0002
Silico-Manganese		0.0006	0.0011
Zinc		0.001	0.0007
Zinc Alloy (Premix)		0.0007	0.0008

PART – C

**Pollution discharged to Environment per unit of Output
(Parameters as specified in the Consent issued)**

(i) Works:

Pollutants	Quantity of pollutants discharged to Lingra Nallah (mass/day)		Concentrations of pollutants discharged to Lingra Nallah (mass/volume)		% of variation from prescribed standards
	(Tons/day)		(mg/l)		In % age (referring CTO)
(a) Water	2022-23	2023-24	2022-23	2023-24	2023-24
TSS	0.189	0.188	63.13	90.17	(-) 9.83 %
COD	0.132	0.080	43.99	38.26	(-) 84.70 %
Ammonia as N	0.007	0.046	2.48	2.24	(-) 95.52 %
BOD	0.009	0.089	3.11	4.28	(-) 85.73 %
Phenols	< 0.0015	< 0.0015	BDL (< 0.5)	BDL (< 0.5)	(-) 50 %
Total Cyanide (as CN ⁻)	< 0.0003	< 0.0003	BDL (< 0.1)	BDL (< 0.1)	(-) 50%

*Detection Limit for Phenols and Cyanide is 0.5 and 0.1 respectively.

Pollutants	Quantity of pollutants discharged (mass/day)		Concentrations of pollutants (mass/volume)		% of variation from prescribed standards
	2022-23	2023-24	2022-23	2023-24	2023-24
(b) Air	Tons/day		mg/Nm ³		In % (referring CTO)
	PM	6.87	6.59	17.59	14.33
SO ₂	50.87	50.52	381	418.93	(-) 30 %
NO _x	21.03	24	142	143.72	(-) 68 %

1. Surface Water Quality

Parameter	Unit	Kisinda Nalla		Lingra Nalla	
		U/S	D/S	U/S	D/S
pH Value	-	6.88-7.8	6.62-7.60	6.72-8.05	6.69-7.79
Colour	Hazen	BDL(DL:1.0)	BDL(DL:1.0)	BDL(DL:1.0)	BDL(DL:1.0)
Temperature	°C	25-28	25-30	25-29	25-28
Total Suspended Solids	mg/l	4-25.40	3.10-30.10	2.80-16	4.20-36
Ammonia (as total ammonia- N)	mg/l	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)
Arsenic as As	mg/l	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)
BOD, 3days at 27°C	mg/l	BDL(DL:2.0)	BDL(DL:2.0)	BDL(DL:2.0)	BDL(DL:2.0)
Boron as B	mg/l	BDL(DL:0.25)	BDL(DL:0.25)	BDL(DL:0.25)	BDL(DL:0.25)
Cadmium as Cd	mg/l	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)
Calcium as Ca	mg/l	11.76-88	23.52-76	15.68-47.52	20-47.52
Chlorides as Cl	mg/l	19.59-88.17	19.59-74.23	14.70-64.33	14.70-58.78
COD	mg/l	7.70-26.90	7.70-19.20	7.68-16	7.70-23.04
Copper (as Cu)	mg/l	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)
Cyanide as CN	mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)
Fluoride as F-	mg/l	0.89-10.1	0.25-4.91	0.22-0.97	0.27-1.61
Free Ammonia	mg/l	BDL(DL:0.1)	BDL(DL:0.1)	BDL(DL:0.1)	BDL(DL:0.1)
Hexa Chromium as Cr ⁺⁶	mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)
Iron as Fe	mg/l	0.18-3.10	0.08-1.80	0.07-10.75	0.22-1.32
Lead (as Pb)	mg/l	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)
Manganese (as Mn)	mg/l	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)
Mercury (as Hg)	mg/l	BDL (DL:0.0002)	BDL (DL:0.0002)	BDL (DL:0.0002)	BDL (DL:0.0002)
Nickel (as Ni)	mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)
Nitrate as N	mg/l	0.58-2.87	0.45-2.01	0.69-2.32	0.56-1.86
O&G	mg/l	BDL(DL:1.4)	BDL(DL:1.4)	BDL(DL:1.4)	BDL(DL:1.4)
Phenolic Comp	mg/l	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)
Phosphate as P	mg/l	0.08-0.31	0.08-0.28	0.14-0.60	0.08-0.24
RFC	mg/l	0.1-5.37	0.1-8.98	0.1-2.68	0.1-13.96
Selenium (as Se)	mg/l	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)
Sulphate mg/l	mg/l	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)
TKN	mg/l	BDL(DL:0.3)	BDL(DL:0.3)	BDL(DL:0.3)	BDL(DL:0.3)

Total Chromium (as Cr)	mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)
Total Nitrogen Content	mg/l	0.95-3.01	0.74-2.84	0.98-2.60	0.8-2.20
Vanadium (as V)	mg/l	BDL(DL:0.05)	BDL(DL:0.05)	BDL(DL:0.05)	BDL(DL:0.05)
Zinc (as Zn)	mg/l	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)

NB: U/S: Upstream; D/S: Downstream; BDL: Below Detection Limit; DL: Detection Limit

2. ETP Treated Water Quality

Parameter	UOM	BOD-1 Treated effluent			BOD-2 Treated effluent		
		Min	Max	Avg	Min	Max	Avg
pH	-	6.80	7.60	7.19	6.94	7.66	7.30
Total Suspended Solid	mg/l	BDL (DL:2.5)	77	26.24	4.70	104	54.35
Oil & Grease	mg/l	BDL (DL:5.0)	BDL (DL:5.0)	BDL (DL:5.0)	BDL (DL:5.0)	BDL (DL:5.0)	BDL (DL:5.0)
Chemical Oxygen Demand (COD)	mg/l	28	84	55.20	24	164	118
Biochemical Oxygen Demand (BOD)(27°C for 3 days)	mg/l	7.20	24	15.60	6.10	52	32.81
Phenol	mg/l	0.01	0.48	0.28	0.01	0.85	0.36
Ammonia (as NH ₄)	mg/l	0.85	21	6.13	3.20	83	26.36
Total Cyanide (as CN ⁻)	mg/l	BDL (DL:0.02)	0.18	0.05	BDL (DL:0.02)	0.40	0.05

Parameter	UOM	ETP-1			ETP-2		
		Min	Max	Avg	Min	Max	Avg
pH	-	6.70	7.41	7.06	6.70	7.62	7.16
Total Suspended Solid	mg/l	BDL (DL:2.5)	74	18.61	BDL (DL:2.5)	28	7.43
Oil & Grease	mg/l	BDL (DL:5.0)	BDL (DL:5.0)	BDL (DL:5.0)	BDL (DL:5.0)	BDL (DL:5.0)	BDL (DL:5.0)
Chemical Oxygen Demand (COD)	mg/l	BDL (DL:4.0)	20	10.88	BDL (DL:4.0)	24	9.20
Biochemical Oxygen Demand (BOD)(27°C for 3 days)	mg/l	BDL (DL:2.0)	5.40	3.24	BDL (DL:2.0)	6.60	2.95
Iron as Fe	mg/l	BDL (DL:0.05)	2	0.62	0.06	1.10	0.30

Parameter	UOM	ETP-3			CRM ETP		
		Min	Max	Avg	Min	Max	Avg
pH	-	6.60	7.50	7.05	7.01	7.59	7.26
Total Suspended Solid	mg/l	BDL (DL:2.5)	37	15.31	BDL (DL:2.5)	92	24.06
Oil & Grease	mg/l	BDL (DL:5.0)	BDL (DL:5.0)	BDL (DL:5.0)	BDL (DL:5.0)	BDL (DL:5.0)	BDL (DL:5.0)
Chemical Oxygen Demand (COD)	mg/l	BDL (DL:4.0)	52	24.90	BDL (DL:4.0)	104	39.20
Biochemical Oxygen Demand (BOD)(27°C for 3 days)	mg/l	2.20	13	6.87	BDL (DL:2.0)	29	10.77
Iron as Fe	mg/l	0.14	0.68	0.347	BDL (DL:0.05)	1.8	0.733

3. Sewage Treatment Plant -Treated outlet quality

Parameter	UOM	BF-1 STP			SMS-1 STP			AEL STP			Colony STP		
		Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
pH	-	6.79	7.52	7.07	7.02	7.55	7.23	6.79	7.64	7.19	6.79	7.52	7.07
TSS	mg/l	BDL (DL:2.5)	41	7.07	19	99	63	BDL (DL:2.5)	74	21.2	5.4	56	22.83
BOD	mg/l	BDL (DL:2.5)	7.8	3.7	4	44	18.15	4.3	28	12.55	BDL (DL:2.5)	28	13.56

4. Plant Discharge Water Quality Analysis report.

Parameter	UOM	Discharge to Lingra Nallah			Discharge to KisindaNallah		
		Min	Max	Avg	Min	Max	Avg
pH	-	7.15	10.80	8.04	6.92	9.42	8.11
Total Suspended Solid	mg/l	35.00	89.00	45.68	21.00	130.00	36.52
Oil & Grease	mg/l	BDL (DL:4.0)	BDL (DL:4.0)	BDL (DL:4.0)	BDL (DL:4.0)	BDL (DL:4.0)	BDL (DL:4.0)
Chemical Oxygen Demand (COD)	mg/l	28.00	48.00	38.90	22.00	59.00	30.90
Biochemical Oxygen Demand (BOD)(27 ° C for 3 days)	mg/l	3.20	6.30	4.35	2.80	4.60	3.73
Phenol	mg/l	BDL (DL:0.5)	BDL (DL:0.5)	BDL (DL:0.5)	BDL (DL:0.5)	BDL (DL:0.5)	BDL (DL:0.5)
Ammoniacal Nitrogen	mg/l	0.72	3.80	2.37	0.19	0.41	0.28
Total Cyanide	mg/l	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)

4. Ambient Air Quality

Parameters	UoM	Norm	CAAQMS-1			CAAQMS-2			CAAQMS-3		
			Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
PM10	µg/m ³	100	30.82	198.00	90.93	72.80	261.00	144.84	45.40	291.24	126.98
PM2.5	µg/m ³	60	19.40	93.61	45.41	28.50	95.65	54.70	19.95	147.71	58.34
SO ₂	µg/m ³	80	10.53	21.30	14.09	15.85	24.91	20.33	2.05	27.91	7.19
NO ₂	µg/m ³	80	11.81	30.49	20.49	8.90	9.80	9.51	9.80	33.53	17.91
CO	mg/m ³	2	0.65	0.71	0.68	0.66	0.83	0.75	0.51	0.90	0.72

Parameters	UoM	Norm	CAAQMS-4			CAAQMS-5		
			Min	Max	Avg	Min	Max	Avg
PM10	µg/m ³	100	32.70	253.62	139.09	49.13	236.87	138.25
PM2.5	µg/m ³	60	15.92	113.19	53.34	16.32	79.74	48.42
SO ₂	µg/m ³	80	5.52	7.96	6.49	11.66	17.49	13.57
NO ₂	µg/m ³	80	12.01	16.54	14.00	7.55	11.30	9.06
CO	mg/m ³	2	0.20	0.66	0.31	0.50	0.96	0.61

Parameters	UoM	Norm	CAAQMS-6			CAAQMS-7		
			Min	Max	Avg	Min	Max	Avg
PM10	µg/m ³	100	49.52	205.63	119.78	54.24	290.74	163.85
PM2.5	µg/m ³	60	16.64	69.40	39.17	22.38	143.63	72.69
SO ₂	µg/m ³	80	8.18	11.26	9.57	11.61	50.63	30.68
NO ₂	µg/m ³	80	8.10	27.42	22.27	8.60	36.51	21.98
CO	mg/m ³	2	0.26	1.08	0.76	0.66	1.26	0.85

NB. CAAQMS 1: Near Township; CAAQMS 2: Near AEL Boundary; CAAQMS 3: Near CRM; CAAQMS 4: Near Water Complex; CAAQMS 5: Near Coke Oven 2; CAAQMS 6: Near Wagon Tippler; CAAQMS 7: Near Material Gate Values are derived from 24 hourly average data except CO values are derived from 8 hourly average data.

PART – D

Hazardous Wastes (As specified under The Hazardous and Other Wastes (Management & Transboundary Movement Rules, 2016))		
Hazardous waste	Total Quantity (MT)	
	During the previous Financial Year (2022-23)	During the current Financial Year (2023-24)
(a) From Process		
Used/ Spent Oil	256	276.83
Waste residue containing oil	36.70	105.15
Spent Ion Exchange Resin	0	0
Rejected Chemical Container	5957 Nos. & 20.18 MT	Nil
Insulation Material	85	97.58
Alkali Residue	12.10	15
Oily Sludge	122	285.15
Zinc Ash & Zinc Dross	510	394.55
Spent Solvent (Waste Thinner – Oily Waste)	3.95	90.76
(b) From Pollution Control Facilities		
BOD plant Sludge	2457	3739.68
Decanter Tar Sludge	1499	1860
ETP Sludge/Chemical Sludge from wastewater treatment plant	780	673.84
Exhaust Air or Gas cleaning residues	188566	237697.76

NB: Exhaust Air or Gas cleaning residues: GCP sludge of BF & BOF, FES dust & bag filter dust of SMS, and Exhaust air of BF, Lime Fines dust.

PART – E
Solid Wastes

Total Quantity Generated

Name of the Waste	Total Quantity Generated (MT)	
	During the previous Financial Year (2022-23)	During the current Financial Year (2023-24)
(a) From Process		
1. Char	162983	163377
2. BF Slag	1847873	1892405
3. SMS Slag	871195	989074
4. Bottom Ash	33669	27567
(b) From Pollution Control Facilities		
1. Fly Ash	324752	419397
2. APC Dust (ESP, Bag filter Dust, DRI ESP dust, Lime fines dust, FES dust & GCP Sludge)	155844	237698
3. Mill Scale	62026	73430

(c) (1). Total Quantity Recycled/Reutilized within the Unit

Name of the Waste	Total Quantity Recycled/Reutilized within the Unit (MT)	
	During the previous Financial Year (2022-23)	During the current Financial Year (2023-24)
1. Char	100838	80756
2. SMS Slag	469536	2441562
3. BF Slag	24	0
4. APC Dust (ESP, Bag filter Dust, DRI ESP dust, Lime fines dust, FES dust & GCP Sludge)	29694	271453
5. Mill Scale	60830	92212

(c) (2). Total Quantity Sold

Name of the Waste	Total Quantity Sold (MT)	
	During the previous Financial Year (2022-23)	During the current Financial Year (2023-24)
1. Char*	79792	82563
2. SMS Slag	451662	3090
3. BF Slag	1921678	1907127
4. APC Dust (ESP, Bag filter Dust, DRI ESP dust, Lime fines dust, FES dust)	101788	332

* 2771 MT Char utilized/ sold from legacy stock

(c) (3). Total Quantity Disposed/Stored

Name of the Waste	Total Quantity (MT)	
	2022-23	2023-24
1. SMS Slag (Stored inside the plant)	Nil	Nil
2. BF Slag (Stored inside the plant)	26064	Nil
3. APC Dust (ESP, Bag filter Dust, DRI ESP dust, Lime fines dust, FES dust & GCP Sludge)	24363	Nil
4. Mill Scale (Stored inside the plant)	1196	Nil
5. Fly Ash & Bottom Ash (Utilised externally)	356629	446964
6. Fly Ash (Stored inside the plant)	1792	Nil

NB. Fly ash and Bottom Ash generated during 2023-24 were used outside the plant for NH construction, bricks making and reclamation of abandoned stone quarries.

PART – F

Chemical Composition of majority of waste as produced in process of Tata Steel, Meramandali operation is given below:

Name of the Wastes	Chemical Composition (%)	Disposal Method
ETP-Sludge	SiO ₂ : 39.21 Na ₂ O :0.41 Al ₂ O ₃ : 23.32 K ₂ O :1.65 Fe(T) : 10.3 P ₂ O ₅ :0.06 TiO ₂ :0.36 S ₀ ₃ :0.28 MnO :0.049 C :3.51 CaO :0.78 Cl :0.23 MgO :1.21 LOI :16.28	Steel Making Process
ETP Sludge From CRM	SiO ₂ : 2.40 Na ₂ O : 1.22 Al ₂ O ₃ : 1.15 K ₂ O : 0.52 Fe(T) : 3.72 P ₂ O ₅ : 0.45 TiO ₂ : 0.03 S ₀ ₃ : 0.17 MnO : 0.10 C : 17.5 CaO :21.81 Cl : 1.13 MgO : 2.54 LOI : 42.75	Stored in special containers followed by disposal at CHWTSDF.
BOD plant Sludge	Al ₂ O ₃ : 0.08 K ₂ O : 0.65 Fe(T) : 7.28 P ₂ O ₅ : 0.06 TiO ₂ : 0.36 S ₀ ₃ : 0.45 MnO : 0.064 Cl : 0.23 CaO : 0.16 LOI : 80.2 MgO :0.02 Na ₂ O : 0.24	Recycle in Coke Oven with in plant permises
Decanter Tar Sludge	Al ₂ O ₃ : 0.04 K ₂ O : 0.026 Fe(T) : 0.01 P ₂ O ₅ : 0.16 TiO ₂ : 0.94 S ₀ ₃ : 0.07	Recycle in Coke Oven with in plant permises

	MnO : 0.001 CaO : 0.015 MgO : 0.003 Na ₂ O : 0.005	Cl : 0.29 LOI : 66.4	
Alkali Residue	Al ₂ O ₃ : 0.84 Fe(T) : 49.97 TiO ₂ : 0.21 MnO : 0.374 CaO : 1.87 MgO : 1.13 Na ₂ O : 0.38	K ₂ O : 0.42 P ₂ O ₅ : 0.001 S ₀ ₃ : 0.85 Cl : 0.16 LOI : 43.2	Stored in designated containers followed by disposal at CHWTSDF.
Flue Dust	SiO ₂ : 4.18 Al ₂ O ₃ : 1.79 Fe(T) : 57.7 TiO ₂ : 0.09 MnO : 0.056 CaO : 2.28 MgO : 0.74	Na ₂ O : 1.13 K ₂ O : 1.37 P ₂ O ₅ : 0.001 S ₀ ₃ : 1.78 C : 10.24 Cl : 0.13 LOI : 11.4	Reused in Sinter Plant with in plant permises
BOF GCP Sludge (LD Sludge)	SiO ₂ : 4.32 Al ₂ O ₃ : 1.78 Fe(T) : 53.1 TiO ₂ : 0.12 MnO : 0.095 CaO : 12.45 MgO : 4.02	Na ₂ O : 1.16 K ₂ O : 0.97 P ₂ O ₅ : 0.001 S ₀ ₃ : 0.31 C : 0.85 Cl : 0.075 LOI : 2.75	Reused in Sinter Plant with in plant permises
SMS Slag	SiO ₂ : 13.42 Al ₂ O ₃ : 1.78 Fe(T) : 26.7 TiO ₂ : 0.84 MnO : 0.022 CaO : 45.22 MgO : 10.80	Na ₂ O : 1.58 K ₂ O : 0.88 P ₂ O ₅ : 0.20 S ₀ ₃ : 0.20 C : 0.07 Cl : 0.27 LOI : 0.52	Processed in MRP for separation of Mag and Non-Mag. Magnetic material recycled in steel making process. Non-Mag being used in sinter, brick manufacturing, & road making.
Lime Fine De-dusting Dust	SiO ₂ : 2.41 Al ₂ O ₃ : 1.12 Fe(T) : 2.68 TiO ₂ : 0.10 MnO : 0.066 CaO : 45.63 MgO : 12.8	Na ₂ O : 3.01 K ₂ O : 0.89 P ₂ O ₅ : 0.03 S ₀ ₃ : 0.26 C : 5.01 Cl : 0.58 LOI : 23.15	Reused in Sinter Plant with in plant permises
Mill Scale	SiO ₂ : 0.09 Al ₂ O ₃ : 0.32 Fe(T) : 65.4 TiO ₂ : 0.01 MnO : 0.012 CaO : 0.20 MgO : 0.99	Na ₂ O : 1.33 K ₂ O : 0.74 P ₂ O ₅ : 0.001 S ₀ ₃ : 0.03 C : 0.13 Cl : 0.05 LOI : 2.47	Reused in Sinter Plant with in plant permises
GCP Dust	SiO ₂ : 14.65 Al ₂ O ₃ : 1.94	Na ₂ O : 1.33 K ₂ O : 0.87	Reused in Sinter Plant with in plant permises

	Fe(T) : 29.3 P ₂ O ₅ : 0.001 TiO ₂ : 0.15 S ₀₃ : 1.46 MnO : 0.049 C : 30.7 CaO : 3.44 Cl : 0.45 MgO : 1.45 LOI : 35.71	
BF Granulated Slag	SiO ₂ : 32.99 Na ₂ O : 1.55 Al ₂ O ₃ : 15.58 K ₂ O : 1.34 Fe(T) : 1.10 P ₂ O ₅ : 0.001 TiO ₂ : 0.71 S ₀₃ : 1.61 MnO : 0.065 C : 0.24 CaO : 31.77 Cl : 0.14 MgO : 9.14 LOI : 0.61	Sold to cement plant

PART – G

SN	Pollution abatement Measures taken in 2023-24	Impact of pollution control measure on conservation of natural resources and cost of production
1	Water Management	Freshwater consumption in closed circuit has been reduced by increasing the Cycle of Concentration (COC) up to 8.
		Installation of decanter to recover water from sludge of primary treatment plant.
2	Installation of APCE	Reduction in specific PM emission and to be continued. Installation of high frequency transformer rectifier (HFTR) and micro-pulse at Sinter Plant and HFTR at DRI to reduce stack emission.
3	Green Belt Development	41821 nos. saplings were planted both inside and outside the plant during April 2023 to March 2024.
4	Dust Suppression	05 Nos. of vehicle mounted mist canon cum road washers have been engaged to control fugitive dust.
		43 KMs of road has been concreted/ paved and 10 Nos. of mechanical road sweeping machines have been engaged for road cleaning.
		Dust suppression system has been installed in Wagon Tippler to reduce fugitive dust emission during Wagon tipping. Pre wetting of railway wagons are being made to reduce fugitive dust emission.
		Martin lip double skirt rubber has been installed at conveyor junction houses to reduce fugitive dust emission.
		5 Nos. of wheel washing systems have been installed at RMHS/RMPP, DRI, WHRB, Blast Furnace Power Plant (I&II).
		Installation of metallic screen barrier along the boundary line at RMHS has been completed.

5	PM10 Analyzer Installed	6 nos. of Portable PM ₁₀ Analyzer have been installed at strategic location of different unit to assess the Ground Level Concentration of PM ₁₀ .
6	Installed Fluoride treatment plant at Coke Oven and SMS	Commissioned Fluoride Treatment Plant for treatment of Fluoride in Coke Oven 2 and SMS wastewater.

Cost Estimation of Pollution Control (in Rs. Crores)

Description	Expenditure in crores during 2023-24 (OPEX)	Expenditure in crores during 2023-24 (CAPEX)
Air Pollution Control	259.52	354.00
Water Pollution Control	38.22	144.00
Solid Waste Management	175.62	-
Hazardous Waste Management	1.53	-
Miscellaneous [#]	8.47	-
Total	483.36	498.00

[#]Miscellaneous expenditure includes environment.

Details of Plantation (nos.) done from April 2023 to March 2024

Month	Plantation in Numbers		Species
	Inside	Outside	
April 2023	30	0	Peltophorum, Terminalia cattapa, Pongamia, Kadamba, Pongamia, Neem, Mimousopselangi, Michelia Champak, Samnea samam, Cassia seamea, Jacaranda, Cassia fistula, Momousops elangi, Custard apple, Mango, Jackfruit, Guava, Sapota
May 2023	119	0	
June 2023	4737	49	
July 2023	14462	160	
August 2023	6486	0	
September 2023	9770	0	
October 2023	3775	0	
November 2023	0	0	
December 2023	124	0	
January 2024	1570	0	
February 2024	0	0	
March 2024	539	0	
Total	41612	209	

PART – H

Additional measures/investment proposals for environmental protection including abatement of pollution, and prevention of pollution.

- Upgradation of the existing pollution control equipment to minimize the levels of particulate matter (PM) emissions.
- Improvement in water recycling facility for further reduction in specific water consumption.
- New pollution control equipment is with more stringent design with less emission value.
- Installation of 6 Nos. of HD IP Cameras with data connectivity to PCB.

PART – I

Any other undertaken project for improving the quality of environment

- Boiler of Captive power plants have been converted from coal fired to gas fired, thus there is reduction in generation of fly ash.
- LD slag after metal recovery, is being used internally in the manufacturing process as well as externally in brick, road making & hardstand works. Slag Atomisation Plant is also in operation.
- Zero effluent discharge (ZED) installation is in advance stage and will be completed by FY 25.
- Energy efficiency improvement in operations of TSM works by installing variable Frequency Drive and Back Pressure Turbo Generator.
- Installation of industrial vacuum cleaner (IVC) at Junction houses and material transfer point.
- Installation of metallic wind barrier at RMHS area to control dust emission.
- Installation of DE system at junction house 34, 34A, 35 & 74 to control emission.
- Installation of DFDS system at mixing house of sinter plant.
- Installation of 3rd dedusating car unit at Coke Oven -1.
- M/s. Tata Steel Limited, Meramandali is certified by Integared Management System (ISO 14001:2015, ISO 9001:2015 & ISO 45001:2018). IMS audit is being carried out to comply the requirement.
